

distribution. Bay scallops prefer shallow sandy substrate. Although soft bottom habitat is defined as “unvegetated” and lacks visible structural habitat, the surface sediments support an abundance of microscopic plants (benthic microalgae) and numerous burrowing animals hidden below the surface. Soft bottom provides a food source for juvenile and adult bay scallops. Scallops consume resuspended benthic microalgae, zooplankton, bacteria, detritus, and other organic matter (Pattilo et al. 1997). Shallow soft bottom habitat can potentially be colonized by SAV or oysters, and become more favorable for bay scallop use.

In addition to providing a food source for scallops, soft bottom plays a very important role in the ecology of estuarine ecosystems. Bottom sediments store, process, and release nutrients, chemicals, and microbes, regulating their supply in the water column (Matoura and Woodward 1983). Soft bottom also provides a rich food base for many invertebrates and fish due to the food base living on and in the sediment (Peterson and Peterson 1979; Currin et al. 1995). Although there is little structure to hide behind, bay scallops and other small organisms can find refuge from fish predators by remaining on very shallow flats that fish predators cannot access (Peterson and Peterson 1979; Ross and Epperly 1985). Scallops on flats are vulnerable to avian predators.

Activities that lead to the deepening, loss, or chemical contamination of shallow and intertidal habitat are the greatest threat to this habitat. Estuarine shoreline stabilization can degrade soft bottom habitat by reducing or eliminating the intertidal zone, deepening shallow soft bottom habitat, or contaminating sediment from leaching of toxic preservatives from wood structures (Weis et al. 1998). Refer to the water quality section (Section 9.2) for more information on chemical contamination of bottom sediments.

Soft bottom habitat may be affected by marina and dock facilities through alteration of the shoreline configuration, modified circulation patterns, and subsequently, changes in bottom sediment characteristics (Wendt et al. 1990). Because benthic microalgae, an important component of primary production in soft bottom habitat, are light-dependent, bottom sediments in dredged marinas will have reduced light availability due to the deeper water depth and shading from docking structures (Ianuzzi et al. 1996). Operation of a marina can also affect productivity of the soft bottom community due to introduction of heavy metals, hydrocarbons, and bacteria (Chmura and Ross 1978; Marcus and Stokes 1985; Voudrias and Smith 1986). Heavy metals and hydrocarbons are toxic to many soft bottom dwelling invertebrates and benthic feeding fish (Weis and Weis 1989). Dissolved oxygen (DO) may become depleted or below optimum thresholds in dredged marina basins and channels. A North Carolina marina study found significantly lower DO concentrations (less than 5.0 mg/L) inside some marinas compared to samples from water outside marinas (DEHNR 1990).

While MFC rules are designed to minimize commercial fishing gear impacts to fisheries habitat, these restrictions primarily focus on restricting the use of highly destructive bottom disturbing gear from most structural bottom habitats, such as oyster or SAV beds. Soft bottom habitat, because of its low structure and dynamic nature, has